

REMARKS

Claims 1 and 3-33 are now pending in the application. The Examiner is respectfully requested to reconsider and withdraw 1) the rejection(s) of claims 1, 3-6, 12-13, 16-19, 23, and 29-33 under 35 U.S.C. § 102(b) and 103(a), 2) the objection(s) of claims 7-11, 14, 15, 20-22, and 24-28 in view of the amendments and remarks contained herein.

ALLOWABLE SUBJECT MATTER

The Examiner states that claims 7-11, 14, 15, 20-22, and 24-28 would be allowable if rewritten in independent form. Accordingly, Applicant(s) have amended claims 7-11, 14, 15, 20-22, and 24-28 to include the limitations of the base claim and any intervening claims. Therefore, claims 7-11, 14, 15, 20-22, and 24-28 should now be in condition for allowance.

DRAWINGS

The drawings stand objected to for certain informalities. Applicant(s) have attached revised drawings for the Examiner's approval.

REJECTIONS UNDER 35 U.S.C. §102(b) AND 35 U.S.C. 103(a)

Claims 1, 3-6, 12-13, 16, 19, 23, and 29-33 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,678,392 issued to Powell (Powell).

Applicants' invention discloses a computerized method for authenticating an electronic file particularly having a graphical content by generating and authenticating

an object level representation of the graphical content at an object level and adding authenticated information to the electronic file based on the object level representation of the graphical content wherein the most graphical content contains one bit per pixel values. The authentication system further includes a pixel level authenticator for authenticating the graph at a pixel level and an encryption system for encrypting the authenticated graph.

Applicants also clearly state the difference between “images” and “graphs.” The most graphs have one bit per pixel, whereas most images have multiple bits per pixel to indicate varying shades and colors. In other words, a minimal alteration of bits in a binary graph can result in a substantial change in the appearance and content of the graph. For example, a useful application for document copying and copyright protection is to provide different levels of access to different users. In such a case it would be very desirable to detect alteration of the original document as well as localize the alteration on the object level. It is more important to detect a substantive change in a document, such as “10%” to “70%”, than it is to detect an increase in the size of an arrow by one pixel.

Therefore, applicants’ technique of having steps of authentication both at a pixel level and an object level creates a new and better method particularly for a content-based authentication of graphs presented in text documents when the critical information of a graph is often contained at the object level rather than the pixel level.

Distinctively, in the Applicants’ invention, either the pixel level or the object level protection is optional depending on the application in order to overcome a critical flaw that pixel level authentication may also result in less flexibility. For example, if the

annotation font of a graph changes but the content of the graph does not, pixel level authentication will alert the owner that the annotations have been altered. Having both the pixel and object level authenticators can easily prevent similar types of false alerts by detecting alteration of the original document as well as localize the alteration on the object level.

Foregoing reasons, Applicants' invention teaches a desirable method to bridge text-based authentication techniques to the authentication of graphs in our confidentiality-conscious society today.

Powell teaches a method for embedding a signature into an original image to create a signed image by selecting signature points from previously selected candidate points in the original visible image then adjusting the pixel values of the signature points and surrounding pixels, for instance, by locating relative extrema in the continuous space of pixel values and selecting the signature points from among the extrema. The Powell's technique allows to have a signature on an original image (creating a signed image) without various problems that used to be caused by intentional modification of the image.

Powell has no method for creating two (object and pixel) levels of authentication which is a heart of Applicants' invention. Further more, Powell does not teach a computerized method, for authenticating a graphical content in a text document, having an object level authenticator and a pixel level authenticator in addition to an encryption system.

With regard to the rejections of claims 17 and 18 under 35 U.S.C. §103(a) as being unpatentable based upon Powell in view of U.S. Patent No. 5,335,290 issued to

Cullen (Cullen) and further in view of John Clarkson, "Converting Excel 97 Data to HTML," (hereinafter Clarkson), Claim 17 depends on Claim 1. The Examiner has rejected Claim 17 in part for the reasons applied in rejecting Claim 1. As discussed above, Powell fails to teach the recitations of Claim 1. In particular, Powell does not teach the claim 1 recitations, "authentication information to the electronic file based on the object level representation of the graphical content, wherein the graphical content contains ~~binary pixel bit~~ one bit per pixel values."

Regarding the rejection of claim 18, as noted above, Powell fails to teach the recitations of claim 18 and also claim 1, and hence by implication also fails to teach the recitations of claim 17 which depends on claim 1. Powell, Cullen, and Clarkson do not anticipate claims 17 and 18. Applicants, therefore, respectfully request the Examiner to withdraw rejection of claims 17 and 18, and allow the same.

Applicant respectfully asserts that independent claims 1, 18, and 29 recite novel subject matter neither taught, suggested, or motivated by, Powell, Cullen and Clarkson, thus are in condition for allowance. Therefore, Applicant respectfully requests that the Examiner withdraw the rejection(s) of claims 3-6, 12-13, 16, 17, 19, 23, and 30-33 under 35 U.S.C. § 102(b) and 103(a) based on their dependency from allowable claims.

CLAIM AS AMENDED

In conclusion, Powell, Cullen and Clarkson, alone or combined, do not teach all of the limitations recited in independent claims 1, 18 and 29, especially as amended.

In order to more fully distinguish applicant's invention from prior art, claims have been amended to recite:

[Claim 1] ... wherein the graphical content contains ~~binary pixel bit~~ one bit per pixel values.

[Claims 7-10] ~~The method of claim 1 further comprising the step of~~ A computerized method for authenticating an electronic file, the method comprising the steps of:

receiving an electronic file having a graphical content;

generating an object level representation of the graphical content;

adding authentication information to the electronic file based on the object level representation of the graphical content, wherein the graphical content contains one bit per pixel values; and

authenticating the object level representation with a text authentication algorithm. [Claim7]

authenticating the object level representation with a checksum, [Claim8]

[Claim 11] ~~The method of claim 7 further comprising the step of~~ A computerized method for authenticating an electronic file, the method comprising the steps of:

receiving an electronic file having a graphical content;

generating an object level representation of the graphical content;

adding authentication information to the electronic file based on the object level representation of the graphical content, wherein the graphical content contains one bit per pixel values;

authenticating the object level representation with a text authentication algorithm; and

authenticating the object level representation with a cryptographic hash function.

[Claims 14 and 15] A computerized method for authenticating an electronic file, the method comprising the steps of:

receiving an electronic file having a graphical content;

generating an object level representation of the graphical content;

adding authentication information to the electronic file based on the object level representation of the graphical content, wherein the graphical content contains one bit per pixel values;

authenticating the graphical content at a pixel level; and

adding visible authentication information to the graphical content,

[Claim 18] ... ~~and~~ encrypting the authenticated graph; and

[Claims 20-22] ~~The method of claim 19 further~~ A computerized method for authenticating a binary graph, the method comprising the steps of:

authenticating the graph at a pixel level;

authenticating the graph at an object level;

encrypting the authenticated graph;

transmitting the authenticated graph to a recipient;

adding visible authentication information to the graph; and

[Claims 24 and 25] ~~The method of claim 23 further comprising the steps of:-~~ A computerized method for authenticating a binary graph, the method comprising the steps of:

authenticating the graph at a pixel level;

authenticating the graph at an object level;

encrypting the authenticated graph;

transmitting the authenticated graph to a recipient;

adding invisible authentication information to the graph;

forming a truncated image from the graph;

[Claims 26-28] ~~The method of claim 18 further comprising the step of~~ A computerized method for authenticating a binary graph, the method comprising the steps of:

authenticating the graph at a pixel level;

authenticating the graph at an object level;

encrypting the authenticated graph;

transmitting the authenticated graph to a recipient; and

[Claim 29] A graph authentication system comprising:

an electronic file for receiving a graphical content; ...

an encryption system for encrypting the authenticated graph-; and

a recipient for receiving the authenticated graph.

CONCLUSION

Based on all of the foregoing, the Applicant(s) believes that all pending claims are in condition for allowance and notice to such effect is respectfully requested at the earliest possible date. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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AMENDMENTS TO THE DRAWINGS

The attached "Replacement Sheet(s)" of drawings include(s) changes to Figures 9(a) – 9(d), 11 – 16, 17(a) -17(d), and 18 and new Figures 9A – 9D, 11 – 16, 17(a) - 17(d), and 18. The attached "Replacement Sheet(s)," which include(s) Figures 9A – 9D, 11 – 16, 17(a) -17(d), and 18, replace(s) the original Figures 9(a) - 9(d), 11 – 16, 17(a) - 17(d), and 18.

Attachment: Replacement Sheet(s)